Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

plains and transplanted to high altitudes became biennials or perennials, as *Poa annua* and *Senecio viscosus*, while *Calamintha acinos* became not only perennial but subfruticose.

In 1919 seeds from known individuals were sown on July 1 at Fontainebleau at an altitude of 78 m., and in the Pyrenees at 2000 m. The resulting plants were compared on September 30, and all at the alpine station showed decided dwarfing. In spite of the fact that many species did not reach maturity in the mountains, several showed the mature form of leaf earlier than in the lowland. Some species, such as *Sinapis arvensis* and *Centaurea cyanus*, proved by their flowering that the dwarfed alpine individuals were quite mature. Many of the alpine forms exhibited a decidedly increased development of hairs and of anthocyan.—GEO. D. FULLER.

Lycopodium.—HOLLOWAY,[11] in his fourth paper on New Zealand species of *Lycopodium*, presents sections PHLEGMARIA and CERNUA, the former represented by *L. Billardieri*, with its var. *gracile*, and *L. varium*, the latter by *L. cernuum*, *L. laterale*, and *L. ramulosum*.

In the PHLEGMARIA group the general form of the prothallium "consists essentially of a central body of tissue which may be either bulky or more or less elongated, and a number of branches which arise adventitiously from the central body." The plants are dorsiventral and the sex organs zonate. The latter arise "immediately behind the apex" of either the main body or the branches, and are associated with numerous paraphyses. The archegonia occur only on the central body. The endophytic fungus may occupy the entire mass of cells of the main body when young, except the generative tip and the epidermis. In the older plants there is a central layer of elongated cells free from the fungus, probably functioning as "translocation tissue." The identity of the fungus has not been settled, but HOLLOWAY has shown the sporelike bodies observed by other investigators. His figures of the fungus in *L. Billardieri* show exactly the habit of the fungus in the prothallia of *L. lucidulum* observed by the reviewer. The same thing is probably to be found in the prothallium of *L. Selago*. The relationship of the four embryonic organs is well shown in fig. 34.

There is an excellent discussion of body form, comparing prothallia of this section with those of the *Selago* group. HOLLOWAY states that the *Phlegmaria* type of prothallia is "the extreme attained by the cylindrical type of growth"; and that the *clavatum* type is "the extreme attained by the continued conelike manner of growth."

In considering the representatives of CERNUA, most attention is given to *L. ramulosum*. It is an interesting fact that chlorophyll never occurs in the lower part of the prothallium. The fungus is limited to shallow zones, is epidermal, and both intercellular and intracellular. In the protocorm "it seems to be always present in an intercellular position in the central tissues." The demonstration of the fungus in this structure inclines the author toward "BOWER's suggestion" concerning the phylogenetic importance of the protocorm. The most interesting thing to the reviewer is HOLLOWAY's discovery that the germinating spore sometimes develops a filament before the "primary tubercle" stage of TREUB is reached. This fact throws some light upon the phylogenetic history of the *Lycopodium* prothallium.

---

[11] HOLLOWAY, Rev. J. E., Studies in the New Zealand species of the genus *Lycopodium*. IV. Trans. New Zealand Inst. 52:193–239. 1920.

In a discussion of the cause of such a variety of form in the prothallia of *Lycopodium* and *Tmesipteris*, the author says "One cannot avoid the suggestion that the dominating factor . . . . is the presence of the fungus." He suggests that the primary tubercle may be a secondary growth rather than a primary one.—E. A. SPESSARD.

Wilting coefficient studies.—Considerable surprise was expressed at the announcement by BRIGGS and SHANTZ of the "wilting coefficient" as an important critical factor in the relation of soil moisture to the plant, and at their statement that the wilting coefficient was practically the same for all classes of plants and showed little or no variation in response to atmospheric changes. Many seemed to doubt the accuracy of these statements, and several unsuccessful attempts were made to demonstrate a relationship between the evaporating power of the air and the wilting coefficient. SHULL[12] showed rather conclusively that the wilting coefficient is a function of the movement of water in the soil rather than a lack of gradient of forces tending to move the water toward the plant. As a function of the soil finding an expression through plants, rather than a function of the relationship of the forces exerted by the plant, it does not seem surprising that the wilting coefficient is much the same for all plants and for all atmospheric conditions.

Attacking the problem from a somewhat different angle, LIVINGSTON and KOKETSU[13] show even more conclusively that the wilting coefficient is a function of water movement in the soil. These workers made use of small porous porcelain cones or "soil-points" which, while dry, were thrust into the soil. At the end of a suitable period they were withdrawn, and by weighing the amount of water absorption was determined. The data obtained indicated that at permanent wilting the water supplying power of the soil was the same for the different plants used and also for different soils within certain limits. They regard this present report a tentative and preliminary one, but in the soil-point method there seems to be much promise of a complement to the porous cup atmometer investigations of the moisture conditions of the atmosphere.—GEO. D. FULLER.

---

[12] SHULL, C. A., Measurement of the surface forces in soils. BOT. GAZ. **62**:1–29. *figs. 5.* 1916.

[13] LIVINGSTON, B. E., and KOKETSU, R., The water supplying power of the soil as elated to the wilting of plants. Soil Science **9**:469–485. 1920.